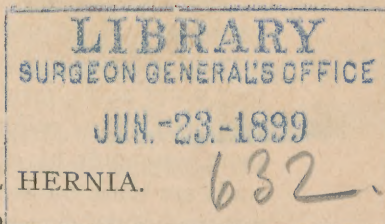


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UMBILICAL AND VENTRAL HERNIA.

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In considering this subject I will speak of all herniae through the anterior abdominal wall, excepting inguinal and femoral including the umbilical variety, because they are alike in their treatment.

UMBILICAL HERNIA.

Recent observations seem to point to the fact that true umbilical herniae are exceedingly rare, but that the opening is usually separated from the umbilical opening proper by fascia. This view was held by Petit, Richter, and Scarpa many years ago and was supposed to have been disproven later by Sir Astley Cooper, Velpeau, Berard, Cruveilhier, Despres, and Malgaigne. Still later those which were found not in the umbilical opening were classified by Gerdy as herniae adumbilicales; by Gosselin as herniae supraumbilicales; and by Marduel as herniae periumbilicales. My own observations lead me to believe both forms are possible, also that true umbilical herniae are much more common in children than the varieties in which the opening is near, but not through the umbilicus. In these latter forms, however, the chances for spontaneous cure are much less than in true umbilical hernia, because the connective tissue around the opening is not so uniformly distributed and hence cannot so easily close the opening by contraction. Consequently true umbilical hernia is less often found in adults coming to us for surgical relief.

In a recent case upon which I performed an operation for the radical cure there was a large umbilical and a small supraumbilical hernia.

An umbilical hernia may be simple or multiple, reducible or irreducible. The latter condition may be due to adhesions or to strangulation umbilical hernia may contain any one of the movable abdominal organs, or several, or all of them. My own cases

presented by the author

contained the omentum most frequently, the colon next and the small intestines least frequently.

Etiology. Umbilical herniae are likely to be due to a hereditary weakness. Malgaigne claims this to be the case in two-thirds of all persons afflicted. They may be congenital, but most commonly they occur as the result of severe intra-abdominal pressure, and occasionally as the result of direct violence. This pressure is caused most commonly by efforts at crying in children whose abdominal walls are tense on account of an accumulation of gas, due to disturbance of the digestive apparatus. Intra-abdominal pressure during defecation in infants suffering from constipation is an important cause. Patients suffering from phimosis are liable to acquire umbilical as well as inguinal hernia, on account of severe intra-abdominal pressure, repeated during each effort at micturition. This fact accounts for the much greater frequency of umbilical hernia in male than in female children. Stone of the bladder is sometimes responsible for the same conditions. Many small children acquire umbilical hernia during attacks of whooping cough.

The age at which umbilical herniae are first noticed has not been determined very accurately. Desault placed the time from the second to the fourth, and Gosselin from the fourth to the sixth month.

Almost all umbilical herniae in children heal spontaneously or after the application of simple bandages, so that at the age of maturity there are very few left. In adults the proportion is quite changed, there being many more umbilical herniae in the female than in the male. This is due to the fact that the female is exposed to extreme intra-abdominal pressure during pregnancy, and especially during childbirth. The depression of the umbilicus disappears during the eighth and a prominence takes its place during the ninth month. The number of umbilical herniae in adult females who have not borne children is proportionately quite as small as in males. Distention of the abdomen by other causes, such as abdominal tumors or ascites, has a similar effect. Obesity is a predisposing cause, masses of fat insinuating themselves between the connective tissue fibers closing the umbilical opening. Direct violence to the umbilical region, pressure upon the abdomen, severe falls or sudden and very violent exertion may bring on umbilical hernia.

Regarding the nonoperative treatment, which is always indicated in reducible herniae in children, I would say that the exciting

cause, constipation, phimosis, indigestion, cough, stone of the bladder, etc., should be disposed of first. If possible the child should be kept in the recumbent position for a few weeks. A small flat pad may be placed over the opening and held in place by means of rubber adhesive plaster or an elastic webbing or an ordinary roller bandage, or the pad may be made of celluloid or hard rubber or smooth hard wood, and held in place by means of elastic webbing. But even without any form of treatment whatever the hernia is almost certain to heal.

If the hernia is irreducible or strangulated, or if congenital with a dangerously thin covering, the same operative treatment is indicated as in the adult. This will be described in connection with the operative treatment of ventral hernia. Adults who do not desire operative treatment, or in whom old age or some other serious condition contraindicates this, can usually be much benefited by wearing one of the many abdominal supporters which have been described for this purpose. The one devised by Hoffa (1) seems to me most useful.

The danger of strangulation is considerable, according to Bryant, 6 per cent of all strangulated herniae being of the umbilical variety. Again, the death rate of cases operated upon after stragulation has taken place is nearly 50 per cent according to Uhde. Consequently it seems wise to advise the operation for radical cure, provided one is in a position to do aseptic surgery.

VENTRAL HERNIA.

So large a proportion of the civilized human family has undergone abdominal section for the surgical relief of some intra-abdominal disease that ventral herniae from this cause outnumber those from other forms of traumatism to such an extent that the latter need hardly be considered. A study of these cases shows that the following conditions very frequently give rise to ventral hernia after abdominal sections. 1. Abdominal drainage. 2. Suppuration of abdominal wounds. 3. Leaving the bed too soon. 4. Cough. 5. Vomiting. 6. Constipation. 7. Subsequent pregnancy. 8. Heavy lifting. 9. Insufficient coaptation of corresponding layers of tissue. 10. Extreme distention of the abdomen from any cause.

Prophylaxis. This being the case we must look for prophylactic measures.

1. Abdominal drainage should be limited to cases in which it

seems absolutely necessary to prevent septic peritonitis, and to cases of tubercular peritonitis in which drainage is the important part of the treatment. Cases in which drainage has been used should be kept in bed until the entire wound is perfectly solid, or at least six weeks after the drain has been removed.

2. Suppuration should be prevented. Of course this cannot be accomplished in every case, but if the operation is performed with reasonable speed and care and if the tissues are manipulated gently it will be of rare occurrence.

3. Patients should remain in bed six weeks after an abdominal section, even though the wound heal primarily.

4 and 5. In case of cough or vomiting at any time after a laparotomy, the wound should be protected by the use of broad rubber adhesive plaster straps, applied snugly. I have known a ventral hernia to occur more than a year after a laparotomy from a violent cough lasting several weeks.

6. Patients should not be allowed to suffer from constipation at any time after an abdominal section.

7. In case of a subsequent pregnancy the wound should be protected by the use of an abdominal binder until the eighth month and later by rubber adhesive plaster straps until the delivery has taken place.

8. These patients should not lift heavy weights.

9. Perfect coaptation should be secured between corresponding layers of the abdominal wall. This can be accomplished easily in the following manner: Silkworm gut sutures are applied an inch or one and one-half inches apart, grasping each layer of tissue successively down to but not through the peritoneum. These stitches are left untied until the corresponding layers on each side have been coapted by means of rows of continuous catgut sutures.

The peritoneum is first sutured and dropped, this will prevent its insertion between the muscular tissues. A second row of continuous sutures is then applied to the strong fascia external to the muscular layer. This prevents the fascia from insinuating itself between the muscles and at the same time secures a perfect union of this important structure. I am in the habit of using fine catgut double for these continuous sutures because it makes the suture more reliable than a single strand and one can work more rapidly, because it prevents twisting of the suture and the needle cannot become unthreaded. The silkworm gut sutures are now tied and a row of superficial sutures is applied for the accurate co-

aptation of the margins of the skin. It is not necessary to tie the silkworm gut sutures very tightly. There will be a slight amount of swelling of the tissues and consequently the healing will be more perfect if the sutures are tied just sufficiently tight to keep the tissues in coaptation. The tension upon these sutures in case of vomiting is decreased by the use of rubber adhesive straps.

Many other methods of closing the abdominal wound for the purpose of preventing ventral hernia have been described, such as overlapping the layers, laying the recti muscles bare throughout the extent of the abdominal wound. In case of a long wound, excising the umbilicus, splitting the recti muscles and crossing the fragments over the middle of the abdominal wound, etc., but none of these methods seem to have gained many adherents. Professor Max Schede's method of applying fine silver wire sutures through all the layers except the skin and closing the latter by means of a superficial suture seems to have been very satisfactory in preventing ventral hernia, the only objection to this method comes from the fact that an nonabsorbable foreign substance is left in the tissues.

OPERATION FOR RADICAL CURE OF UMBILICAL AND VENTRAL HERNIA.

The operation is indicated whenever the hernia is strangulated or when it is likely to become so, also whenever it gives rise to pain or discomfort or whenever the covering of the hernia is so thin as to be in danger of rupture; provided, of course, that the patient's general condition will permit of so serious an operation. These indications apply both to umbilical and ventral hernia, except in children in whom an operation for a reducible umbilical hernia is practically never indicated.

We find that Celsus transfixed the sac of umbilical herniae with a needle armed with a double ligature, tying the pedicle in halves and thus attaining a radical cure. Since then many operations have been invented, but at the present time the same principle is employed in operating for radical cure, which I have described in the methods of closing abdominal wounds in order to prevent the formation of ventral hernia.

Preparatory Treatment. It is very important to give attention to the preparatory treatment, especially if the hernia is large, because there is likely to be considerable tension upon the stitches unless proper precautions have been taken to prevent this. If the case is complicated with obesity, which is of very common occurrence, it

is well to reduce this by the use of massage, by limiting the diet and by the application of a very tightly fitting abdominal bandage for some time previous to performing the operation. If the stomach is dilated or distended with gas and mucous, it should be irrigated daily and immediately before the operation, with large quantities of a warm saline solution.

For several days before the operation only liquid diet should be given in order to reduce the accumulation of gas in the intestines. For the same purpose mild cathartics should be given for several days. The day before the operation an ounce of castor oil aids materially in emptying the alimentary canal. Colonic flushings should be employed a few hours before the operation.

All of these steps can be taken without exhausting the patient if carried out carefully and gently. Of course the same precautions must be taken to prevent infection as in abdominal section for any other purpose. If the contents of the hernia are at all adherent to the sac it is well to make the incision through the abdominal wall to one side of the hernial opening, then to excise the entire sac, and in this manner secure a wound which will correspond to the original abdominal wound in an ordinary laparotomy. Now the adhesions can be loosened with comparatively great ease and rapidity. If the hernia contains a mass of omentum matted together by adhesions, this can be removed after multiple ligation, care being taken not to place any ligature too near the intestine, for fear of causing necrosis. If any lesion has occurred to the serous covering of the intestines this should at once be repaired by the use of Lembert sutures. The contents of the hernia having been returned into the abdominal cavity, it is necessary to place the tissues in such a condition that after suturing they are likely to prevent a recurrence of the hernia.

In the upper three-fourths of the abdominal wall, in the median line, the aponeurosis of the internal oblique muscle is divided into two layers, one portion extending behind the rectus muscle and joining the aponeurosis of the transversalis muscle, the other portion extending in front of the rectus abdominis muscle and joining the aponeurosis of the external oblique muscle, forming the powerful fascia in front of the rectus muscle. Further down the aponeurosis of the internal oblique muscle passes entirely in front of the rectus abdominis muscle and joins that of the external oblique muscle, forming the still more powerful fascia we find in front of the rectus abdominis muscle

in the lower fourth of the abdominal wall. Taking these anatomical facts into consideration, a rational method for the radical cure of umbilical and ventral hernia becomes apparent.

First, the recti muscles on either side should be laid bare. This exposes three important layers: (1.) In the upper portion of the median line the first layer is composed of the peritoneum, the aponeurosis of the transversalis muscle and the inner half of the aponeurosis of the internal oblique. Lower down the last tissue is absent in this layer. (2.) The second layer is composed of the rectus muscle on either side. (3.) The third layer, and the most important one for our purpose, is composed of the outer layer of the aponeurosis of the internal oblique muscle and the aponeurosis of the external oblique muscle, and in the lower fourth it is composed of the united aponeuroses of the internal and external oblique muscles. Beyond this layer we have the fat, superficial fascia and skin.

We now apply silkworm gut sutures through all of these layers except the first one, but leave them untied until the other sutures have been inserted. We next suture the first layer with a continuous double catgut suture prepared so that it is reliable both as to being aseptic and durable. Layer No. 3 is next sutured in the same manner. This leaves layer No. 2, composed of the recti muscles, to be coapted by means of the silkworm gut sutures which pass in front of layer No. 1, thus preventing the insinuation of the latter layer between the opposing surfaces of layer No. 2.

In a recent case in which there was an enormous thickness of fat, I inserted the silkworm gut sutures only through layers No. 2 and No. 3, and left the remainder of the wound open to be closed by secondary sutures three weeks after the first operation, after removing the silkworm gut sutures. In this case the tension was extreme and I found it necessary to follow this plan in order to secure permanent coaptation of these important layers.

If the ventral hernia exists in any other portion of the abdominal wall precisely the same principles are carried out. The silkworm gut sutures are carried through all the layers except the one composed of the peritoneum and transversalis fascia. Then this layer is united by means of a continuous double catgut suture and each successive layer of fascia is united separately in the same way. Then the silkworm gut sutures are tied, and a row of coaptation sutures applied to the skin finishes the operation. The ordinary laparotomy dressing is applied. The silkworm gut

sutures are left in place at least ten days, and as much longer as they will remain without cutting. The patient is kept in bed at least six weeks.

One of my assistants is at present engaged in compiling the histories of cases upon whom I have performed the operation, with which he will give a review of the current literature upon this subject, which is too voluminous to be considered in the short time at my disposal.

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